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**Larson et al.**

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(54) **SYSTEMS AND METHODS FOR MEASURING TISSUE IMPEDANCE THROUGH AN ELECTROSURGICAL CABLE**

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See application file for complete search history.

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(57) **ABSTRACT**

The electrosurgical systems and methods of the present disclosure include a tissue resistance measurement system that compensates for capacitive parasitics in a cable connecting an electrosurgical generator to and electrosurgical cable to estimate the real resistance of a tissue load. The electrosurgical generator includes an output stage coupled to an electrical energy source and generates electrosurgical energy. The electrosurgical generator includes a plurality of sensors sensing a voltage and current of the electrosurgical energy and a controller controlling the output stage. The controller includes a calculator that calculates a real part of an impedance based on the sensed voltage and current, an estimator that estimates a resistance of the tissue using a solution to a quadratic equation that is a function of the real part of the impedance, and a control signal generator configured to generate a control signal for the output stage based on the resistance of the tissue.

**20 Claims, 8 Drawing Sheets**

